Generator Waste Certification Program Plan

For TA-53

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1.0 Introduction

All radioactive wastes generated within Facility Management Unit 61 (FMU 61) will be managed in accordance with the LANSCE/FMU 61 Generator Waste Certification Program (GWCP). The document herein is the implementing plan for the GWCP program at LANSCE/FMU 61, as required by Los Alamos National Laboratory (Laboratory) Implementation Requirements (LIR) 404-00-01, *Waste Acceptance, Characterization, and Certification Program*. In addition, implementation of this plan will ensure that all radioactive wastes generated within FMU 61 will meet the applicable requirements of the *LANL Waste Acceptance Criteria* (WAC), PLAN-WASTEMGMT-002.

2.0 Scope

All radioactive wastes generated by FMU 61/TA-53 tenants will be managed in accordance with the GWCP. This plan applies to all radioactive wastes generated within FMU 61, including:

- Low-level radioactive waste (LLW), including tritium-contaminated wastes
- Transuranic (TRU) waste
- Mixed low-level radioactive waste (MLLW)
- Mixed TRU waste

Radioactive wastes are generated throughout TA-53. For a complete facility description of TA-53, see section 1.0, Facility Description and Boundaries, in the *Safety Plan for LANSCE Division and FMU 61* (LANSCE PL 240-01-10).

A majority of the radioactive wastes generated at TA-53 are generated from research/development/testing involving the LANSCE linear accelerator within Building 3. Among the wastes generated here are LLW water used to cool beam-line components such as electromagnets and beam targets. This water is currently stored in tanks at TA-53 for future treatment at the TA-53 Radioactive Liquid Waste Treatment Plant currently under construction. Other LLW generated from research/development/testing within Building 3 include: personal protective equipment; vacuum pump oil; high-efficiency particulate air filters; scrap metal; plastic and cellulose debris; and irradiated metal components, shielding inserts, and beam-line components. LLW and MLLW is also generated in Building 3 in the form of residues and laboratory apparatus used in sampling and analysis of radioactive water.

MLLW can also be generated at the Manuel Lujan Jr. Neutron Scattering Center, Building 7, in the form of contaminated debris generated from maintenance of mercury-containing beam shutters.

3.0 Definitions and Acronyms

3.1 Definitions

Acceptable knowledge — A waste stream characterization method that can be used to meet all or part of the waste analysis requirements appropriate for the waste media. The method may include documented process knowledge, supplemental waste analysis data, and/or facility records of analysis.

Characterization — The determination of a waste's physical, chemical, and radiological characteristics with sufficient accuracy to permit proper segregation, treatment, storage, and disposal according to the treatment, storage, or disposal facility's (TSDF's) waste acceptance criteria (WAC).

Process/Project leaders — Any individual appointed by the tenant line managers to supervise and/or manage a specific radioactive waste-producing project or process.

Waste Acceptance Criteria (WAC) — A waste treatment, storage, or disposal facility's (TSDF's) unique requirements for proper and complete waste characterization, documentation, and packaging and containers. This includes, but is not limited to, requirements for package weight, contents, external and volume contamination, marking, labeling, and waste form restrictions. These requirements must be met by the waste generator before a waste stream can be accepted at a TSDF.

Waste Certification Official — An individual, appointed by the TA-53 Facility Manager, who is responsible for certifying waste streams. TA-53 waste management coordinators will serve in this position.

Waste generator — An individual with knowledge of and direct responsibility for operations that generate waste.

Waste Management Coordinator (WMC) — The individual responsible for coordinating waste management activities on behalf of waste generators, line managers, facility managers, the waste management groups, and other Laboratory organizations. This individual also coordinates resolution of waste management issues on behalf of his or her waste generating organizations, and reviews documents pertaining to the management of waste. At TA-53, the WMC serves as the waste certification official for the GWCP.

Waste Profile Form (WPF) — The form that the waste generator is required to use to properly identify and document the characterization of any solid, hazardous, radioactive, or mixed waste. The use of this form (Form 1346) is required by LIR 404-00-01.0, *Waste Acceptance, Characterization, and Certification Program.*

Waste stream — A waste or group of wastes from one or more processes with similar regulatory, physical, chemical, and/or radiological characteristics. These characteristics are usually grouped according to WAC requirements for treatment, storage, characterization, and disposal.

3.2 Acronyms

AK	acceptable knowledge
ALARA	as low as reasonably achievable
CWDR	Chemical Waste Disposal Request
DOE	U.S. Department of Energy
FMU-61	Facility Management Unit 61
GWCP	Generator Waste Certification Program
HCP	Hazard Control Plan
LANL	Los Alamos National Laboratory
LANSCE	Los Alamos Neutron Science Center
LIR	Laboratory Implementing Requirements
LLW	low-level radioactive waste
LS	Laboratory Standard
MLLW	mixed low-level radioactive waste
PPL	process/project leader
RCA	radiological controlled area
RCRA	Resource Conservation and Recovery Act
SAP	sampling and analysis plan
SWO	Solid Waste Operations
TRU	transuranic
TSCA	Toxic Substances Control Act
TSDF	treatment, storage, or disposal facility
TWSR	Transuranic Waste Storage Request
WAC	waste acceptance criteria
WMC	waste management coordinator
WPF	Waste Profile Form

4.0 Roles and Responsibilities

LANSCE Division Director (or designee)	• Approve GWCP plan for TA-53. • Be responsible for implementing the Waste Acceptance, Characterization, and Certification Program required by LIR 404-00-01.
Tenant Line Manager	• Ensure that the personnel working on processes under their control are trained and qualified in accordance with the requirements of this program. • Ensure that the personnel follow the applicable procedures and Radiation Work Permits, and implement the controls specified in Hazard Control Plans (HCPs). • Provide oversight for the performance of radioactive waste-producing activities in accordance with this program.

Project/Process Leader (PPL)	PPLs, or designees, shall, for processes and projects under their functional supervision: • Review and approve the waste stream records. • Assist the waste generators in identifying the waste processes and radioactive waste streams. • Review and approve the TA-53 Waste Stream Assessment Records. • Designate the waste generators. • Recommend the radioactive waste streams for certification in accordance with the program requirements for radioactive waste generated in processes under their control. • Ensure that the waste generators receive appropriate training.
TA-53 Facility Manager (or designee)	• In addition to the Tenant Line Managers responsibilities noted above, the Facility Manager, or designee, must: • Incorporate the activities required by this plan into TA-53 work control requirements, as appropriate. • Review and approve the work control documents required by this program. • Ensure that the TA-53 facilities meet waste collection and storage requirements. • Ensure development, implementation, and maintenance of procedures defining the facility operations of TA-53. • Verify that the contract or vendor services are conducted in accordance with the requirements of this program. • Ensure the availability of TA-53 waste storage and collection facilities for wastes generated at TA-53.
Waste Management Coordinator	• In addition to the responsibilities in the Waste Management Coordinator (WMC) Program, LS 105-01, the TA-53 WMC must: • Assist the generators with managing radioactive waste in accordance with this program. • Assist the generators with completing the waste stream identification process. • Provide input to the generators in identifying and implementing the work controls and waste minimization. • Coordinate the removal of TA-53 generated radioactive wastes from storage areas. • Notify the appropriate PPL and/or waste generator of any difficulties with radioactive waste storage or collection facilities. • Notify the appropriate PPL and/or waste generator of any difficulties associated with processing or disposal of radioactive wastes or materials. • Ensure that the reuse or recycling of waste materials is evaluated prior to disposition of the waste. • Maintain a tracking system for all radioactive waste streams generated at TA-53.

	• Review each radioactive waste stream characterization in accordance with this program. • Determine the potential disposal options in conjunction with SWO Waste Services and according to WAC requirements, regulatory requirements, and waste characterization needs. • Coordinate waste sampling and analysis through the Hazardous and Solid Waste Group (ESH-19), or other appropriate Laboratory organization, or private vendor. • Provide assistance to the generators in completing and obtaining approval of waste disposal forms including the Waste Profile Form (WPF) and Transuranic Waste Storage Request (TWSR). • Acts as the point-of-contact with the SWO Waste Services personnel. • Notify the TA-53 Facility Manager of any difficulties associated with storage and collection facilities. • Coordinate with the generators on inventory, consolidation, processing, packaging and disposal of common radioactive waste streams. • Prepare and obtain approval for the Chemical Waste Disposal Requests (CWDR). • Ensure that the records in this program are kept up to date. • Perform and document the periodic assessments of field activities for compliance with this program. • Ensure that the changes and revisions to this program are adequately documented. • Inspect and ensure the regulatory compliance of TA-53 waste storage and collection facilities for TA-53 generated radioactive waste. • Review the GWCP waste stream process documentation. • Serve as Waste Certification Official and certify the radioactive waste streams against the requirements of this plan. • Certify that the radioactive waste meets the treatment, storage, and disposal facility (TSDF) waste acceptance criteria (WAC) and other applicable regulatory requirements.
Waste Generators	• Identify and document all processes and potential waste streams generated from the processes. • Document the waste stream assessment for waste prevention/minimization, radiological status, and work controls. • Compile and submit the waste stream characterization information to the WMC for review. • Assist the WMC in the review of that waste stream characterization information. • Ensure all radioactive wastes are managed in accordance with the certified waste stream characterization documentation. • Ensure any changes to the radioactive waste streams or the generating processes are documented and re-evaluated through revisions to the appropriate forms.

	• Ensure that the TA-53 generated radioactive waste containers are marked and/or labeled in accordance with the facility and Laboratory LIR requirements with the assistance of the WMC, as needed. • Manage radioactive waste storage and collection facilities for TA-53 generated waste in accordance with the appropriate regulatory requirements with the assistance of the WMC, as needed. • Ensure that all information and documentation on TA-53 generated radioactive waste streams and processes provided to the WMCs is true, accurate, and current to the best of their knowledge.
Radiation Control Technicians	• Establish the survey and monitoring requirements in support of the operations described in this program. • Perform, document, and report the results of measurements made in support of this program. • Review and sign the appropriate forms pertaining to the radiological status of wastes.

5.0 Training and Qualifications

Tenant line managers and PPLs must ensure that their personnel meet all pertinent Laboratory and/or TA-53 training requirements. Training requirements at TA-53 have been developed, implemented, and documented in accordance with the following documents:

- TA-53 Procedure 53 FMP 113-01.01, *TA-53 Training Program Manual*
- TA-53 Standard 53 FMS 113-01.0, *Facility-Specific Training*
- TA-53 Procedure 53 FMP 113-01.0, *On-The-Job Training*

6.0 Radioactive Waste Stream Certification Process Overview

This section describes the LANSCE/FMU 61 radioactive waste certification process. The implementation of this process is described in 53 FIR 404-00-01, *LANSCE Facility Implementing Requirement for Generator Waste Certification Program*. The process requirements apply to both new and existing activities producing radioactive wastes.

NOTE: For newly planned radioactive waste streams, no work can begin until the WMC approves the initial certification. Existing radioactive waste streams that have been managed prior to the implementation of the GWCP shall be incorporated into the program as soon as possible. For non-planned radioactive waste streams generated from unusual events (i.e. spills), the certification process should be addressed after the situation generating the waste has been stabilized.

The GWCP's primary goal is to establish an efficient and consistent process for documentation and management of LANSCE/FMU 61 generated radioactive wastes.

6.1 Waste Stream Identification

PPLs and waste generators coordinate to identify and document all work processes that generate or potentially generate waste. The WMCs will assist as needed.

Each work process identified as generating or potentially generating waste must be "mapped" as described in Section 6.1 53 FIR 404-00-01. The generator records each work process waste stream on the appropriate forms provided in 53 FIR 404-00-01 so that all of the wastes generated by each process can be linked to that process. The following information must be assessed and documented for each waste stream:

- Description of wastes produced
- Estimated annual volume
- Potential contaminants
- Tentative waste classification (e.g., MLLW)

Once the waste generating process is documented as provided in 53 FIR 404-00-01, the WMC, generator, and PPL must review the information for accuracy. All comments and comment resolutions must be documented and attached to the waste generating process documentation. Each individual's approval must be recorded.

NOTE: Department of Energy Operations Office (DOE/AL) must grant approval to generate wastes that do not have a disposal path. This requirement has been incorporated into LANL performance measures for waste management under Appendix F of the UC/DOE contract. DOE may require also corrective actions to be developed, funded, and implemented to allow the earliest possible disposal of such waste. These requirements apply to all LANL managed waste without a disposal path that is generated from any source, including on-going LANL operations, new projects or process activities, environmental restoration, decontamination and decommissioning, construction, and material inventory. **Proposed processes that generate such waste cannot begin operation until DOE approval is received**. See EM Division Notice 0022, *Approval for Generating Waste with No Disposal Path,* for specific requirements.

The WMC maintains an inventory of all waste generating processes at FMU 61. The WMC assigns a unique process identification number to each process and provides this number to the generator and PPL. This identification number and the successive waste stream numbers are used by the WMC for tracking and filing all waste documentation. The waste generator uses these identification numbers when documenting other information associated with this GWCP.

6.2 Process Controls

The waste generators and the PPLs ensure that process controls for specific tasks are covered by the applicable job procedures and work packages prior to work initiation. This includes assessing waste prevention and minimization methods and the potential radiological status and free release from a controlled area (if applicable) of the wastes. The generator, for each radioactive waste stream, identifies and documents this effort. If

applicable, the waste generator documents how the current job-specific procedures will be modified for implementation of waste prevention and minimization methods and radiological controls.

6.2.1 Waste Minimization Assessment

For each radioactive waste stream, the waste generator at a minimum will record the following:

- Any means of avoiding the generation of this waste.
- Any possibility of modifying the waste to prevent RCRA, TSCA, or radioactive waste status.
- Whether waste minimization methods, such as minimizing materials and utilizing good housekeeping practices, will be employed.
- Any recycling or reuse considerations.

6.2.2 Radiological Assessment

The generator uses the radiological assessment to document how radioactive waste is minimized. If generation of potentially radioactive wastes cannot be avoided, the generator is responsible for meeting the requirements of the following:

- TA-53 Procedure 53 FMP 105-01.1, *Control of Radioactive Waste*.

- ESH-1/TA-53 Procedure ESH-1/TA-53-DP-703-R0, *Packaging, Labeling, and Disposing of Chemical, Mixed and Low-Level Radioactive Waste at TA-53*.

- ESH-1/TA-53 Procedure ESH-1/TA-53-DP-812-R2, *Procedure for Processing Potential Volume/Bulk Contamination at TA-53*.

- LIR 402-704-01.2, *Contamination Control*.

6.2.3 Hazard Analysis and Facility Work Control

Three processes are used at TA-53 for hazard analysis and work control: Safe Work Practices; Facility Work Control; and Authorization Basis development. These processes are described in Section 3.0 of the *Safety Plan for LANSCE Division and FMU 61*. Work controls defined by these three processes (including those specific to process waste generation) are implemented through operating procedures, work control documents, and operational safety requirements. The waste generator and PPL must ensure that controls are in place or are being incorporated for the generation and proper management of process waste streams.

HCPs at TA-53 are prepared and approved as provided in the LANSCE Division Implementing Requirement (LIR) 300-00-01, *Safe Work Practices*, and LIR 300-00-02, *Documentation of Safe Work Practices*. In regard to process waste streams, HCPs at TA-53 must provide:

- A list of the types of wastes expected from the process.

- The location of appropriate hazardous/mixed waste satellite storage areas, or accumulation points for non-hazardous wastes such as LLW and used oil.

- A statement describing the generation and storage of radioactive wastes from the process.

- References for procedures addressing storage, segregation, packaging, handling, shipping, and waste minimization of process wastes.

The requirements for environment, safety and health (ES&H) review of HCPs is also provided in LIR 300-00-01, including assessments of process waste streams generated. WMCs can serve as subject matter experts for the review of HCPs for processes with the potential for waste stream generation.

6.3 Compiling the Waste Stream Characterization Documentation

The waste generator compiles the waste stream characterization information using the information gathered in the previous sections. The purpose of this information is to create a comprehensive file for all characterization documentation associated with a specific radioactive waste stream.

Once compiled, the information with its unique waste stream numbers is submitted to the WMC for the characterization requirements evaluation.

6.4 Characterization Requirements Evaluation

The WMC determines if the waste stream characterization information meets regulatory requirements and the requirements of the potential disposal facility's WAC. For each radioactive waste stream, the WMC documents the evaluation. The evaluation includes:

- Radiological status of the waste. The WMC works with the generator and a Health Physics Operations (ESH-1) representative to assess the radiological status of a waste stream.
- Potential regulatory classification.
- Use and documentation of acceptable knowledge, as provided in LIG 404-00-02, *Acceptable Knowledge*.
- Potential disposal facility's WAC. If no path forward is available for disposal, approval from the Department of Energy (DOE) is required prior to generation of waste.
- Storage and management of generated waste prior to disposal.

Radiological assay methods shall be sufficient to identify and quantify the radiological constituents of a waste stream consistent with the reporting requirements of the pertinent TSDF's WAC and with manifesting requirements.
The WMC includes all characterization documentation with the other documented waste stream information.

6.5 Initial Certification of the Waste Stream Characterization

The WMC performs an initial certification of documented waste stream information. Existing radioactive waste streams may be certified while the process is ongoing. New radioactive waste streams cannot commence until the certification is complete. The initial certification includes:

- Ensuring the elements from the above listed tasks (Sections 5.1 – 5.4) of the waste stream characterization information are documented.
- Ensuring applicable documents incorporate waste prevention, minimization, radiological, and work controls for waste generation.
- Ensuring forms are completed and consistent with the other forms used for documentation.

The WMC documents the review of the waste stream characterization, documents any comments made regarding the characterization, records the outcomes of any comments resolutions, and signs the initial certification of the waste stream.

6.6 Waste Generation

The generator monitors the waste generating processes. The work and subsequent waste generation, storage, and management shall be performed in accordance with the initial certification documentation. If any deviation changing the characteristics of the waste stream is required, work must stop and the WMC must be notified. The WMC must re-evaluate and re-certify the waste stream at that time.

6.7 Additional Characterization

The waste will be characterized according to information in documented waste stream information. After analytical results are received and validated by the WMC, the WMC evaluates the data against the LANL WAC and regulatory criteria. The WMC documents any required changes or revisions.

6.8 Re-Evaluation and Final Certification of the Waste Stream Characterization

The WMC must re-evaluate the documented waste stream information:

- After waste generation.
- If any additional waste characterization is done.
- If the waste stream information or characterization changes.
- Annually.

The re-evaluation review, comments, and comment resolution are documented and the WMC documents by signature the final certification of the waste stream. If changes or revisions were required or if the waste stream is up for annual review, the WMC documents the re-evaluation review, comments, and comment resolution by signature.

The re-evaluation:

- Ensures that appropriate peer reviews were conducted.

- Ensures that the characterization has not turned up new or different information than expected.
- Verifies that all applicable WAC and regulatory requirements have been met.

6.9 LANL Waste Documents

LANL forms such as WPFs, CWDRs, and TWSRs are completed by the generator with assistance from the WMC if necessary, following the guidance in:

- LIG404-00-01, "Waste Generator Guidance for Completing the TRU Waste Storage Record (TWSR)"
- LIG404-00-03, "Waste Profile Form Guidance"

7.0 Preparing for Transport, Storage and Disposal

The generator, with assistance from the WMC, needs to properly label and store waste in accordance with the documented waste stream information and with Laboratory LIRs. If the waste storage time is approaching the 90-day limit for MLLW and an extension is needed, the WMC shall contact the Hazardous and Solid Waste Group (ESH-19) and request an extension. The WMC and waste generator are responsible for meeting all Laboratory, on-site manifest requirements, including Uniform Hazardous Waste Manifests and Land Disposal Restriction notifications.

8.0 Waste Transport and Receipt by the TSDF

The TSDF and LANSCE/FMU 61 shall follow internal procedures for transporting waste, as necessary. Other than record keeping and continued compliance with the certified characterization documentation, the WMC's and the waste generator's responsibilities for waste certification are complete.

9.0 Records Management and Quality Assurance/Quality Control

The WMC shall maintain the original records completed as a result of this process in a physical file in a logical manner. In a similar manner, the waste generator shall maintain copies of the records for their applicable processes and waste streams. Once approved, the documented, certified waste stream information is filed and maintained in accordance with the *Quality Management Plan for the LANSCE Division*, LANSCE PL 110-01.02.

PPLs shall ensure their waste processing programs are consistent with the following documents, as applicable:

- *Implementation Guide for Use with 10 CFR 830.120, Quality Assurance*, G/830.120
- 10 CFR 830.120
- DOE Order 5700.6C, *Quality Assurance*
- Laboratory quality management plans

An independent facility representative shall review quality assurance program compliance for selected waste streams at least annually and shall review all

documentation submitted for new and revised waste streams. This review shall include, as a minimum:

- Verification that required documentation is included in the package.
- Verification that the work control documents cited in the package establish the controls specified in the certification documentation.
- Random verification that selected elements of process descriptions, work controls or other documented activities are in place and/or being performed as described in submitted documentation.

10.0 References

"Acceptable Knowledge," LANL document LIG 404-00-02.0.

"ALARA Program," Solid Waste Operations document PLAN-FMU64-006. Los Alamos National Laboratory.

"Contamination Control," LANL document LIR 402-704-01.2.

"Control of Radioactive Waste", TA-53 Procedure 53 FMP 105-01.1. LANL

"Generator Waste Certification Program" LANSCE Facility Implementing Requirement 53 FIR 404-00-01

"Hazardous and Mixed Waste Requirements for Generators," Los Alamos National Laboratory document LIR404-00-03. Los Alamos National Laboratory.

"LANL Waste Acceptance Criteria," Solid Waste Operations document PLAN-WASTEMGMT-002.

"Managing Radioactive Waste," Los Alamos National Laboratory document LIR404-00-05.

"Managing Solid Waste," Los Alamos National Laboratory document LIR404-00-04.

"Packaging, Labeling, and Disposing of Chemical, Mixed and Low-Level Radioactive Waste at TA-53", ESH-1/TA-53 Procedure ESH-1/TA-53-DP-703-R0. LANL

"Procedure for Processing Potential Volume/Bulk Contamination at TA-53", ESH-1/TA-53 Procedure ESH-1/TA-53-DP-812-R2. LANL

"SWO Generator Waste Certification," EM-SWO document AP-FMU64-020, R.0. LANL

"SWO Generator Waste Certification Program," SWO document PLAN-FMU64-010, R.0.

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U.S. Department of Energy. *Data Quality Objectives* (DOE.LLW-75T). Washington, D.C.: U.S. Department of Energy.

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U.S. Environmental Protection Agency. EPA Guidance for the data quality objectives Process (DQO.A/G-4). Washington, D.C., EPA Guidance for the data quality objectives Process

"Waste Acceptance, Characterization, and Certification Program," Los Alamos National Laboratory document LIR404-00-01.

"Waste Generator Guidance for Completing the TRU Waste Storage Record (TWSR)," Los Alamos National Laboratory document LIG404-00-01.0.

"Waste Management Coordinator Program," Los Alamos National Laboratory document LS 105-01. Los Alamos National Laboratory.

"Waste Minimization," Los Alamos National Laboratory document AR 10-8.

"Waste Profile Form Guidance," Los Alamos National Laboratory document LIG404-00-03.0.